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Researcher honored for 'Outstanding Early Career'

Dr. Matthew Banks, an assistant professor of pharmacology, received the award at VCU's fall convocation. He conducts research on how to treat drug addiction.



WRITTEN BY
Chris Rubis

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The United States is facing a heroin and opioid epidemic, with fatal drug overdoses steadily rising over the past 15 years. Scientists and doctors are working hard researching addiction and developing new ways to treat the growing issue.

One such researcher is Dr. Matthew L. Banks, an assistant professor in VCU's Department of Pharmacology and Toxicology. For his work in this area, Banks recently received the university's Outstanding Early Career Faculty



Dr. Matthew L. Banks

Monkeys are a good model for understanding why humans 'go along this path of misallocating their behavior to abused drugs,' Banks says.

Award.

His research centers on two themes – developing behavioral and pharmacological strategies to treat drug addiction, and making existing medications more effective with fewer side effects. Much of his work at the Medical College of Virginia involves rhesus monkeys.

“The research we do is intended to improve human health and also has applications to improving veterinary medicine,” said Banks, who was honored at VCU’s faculty convocation at the start of the fall semester.

Banks received his doctorate in pharmacy from Ohio Northern University and his Ph.D. from Wake Forest University. He was introduced to drug abuse research in pharmacy school, though his interest in the field stemmed from his experience as a runner who would often experience the “runner’s high”.

Currently, Banks is researching whether the use of an NMDA receptor antagonist called memantine would create an opioid sparing effect. The goal is to increase the therapeutic effect of an opioid, requiring a user to take less of the drug for pain management. An NMDA antagonist inhibits the action of the brain’s N-Methyl-D-aspartate receptor.

The use of animals in research can be controversial. The MCV campus houses a lab of rhesus monkeys, which are involved in much of Banks’ research. The Institutional Animal Care and Use Committee at VCU, as well as the federal agency providing a research grant, must review any proposals for use of laboratory animals to ensure the use is justified and the health and welfare of the animals will be protected. When not being studied, the monkeys live in a vivarium on campus.

Banks' research on the drug phendimetrazine suggests that it may be a viable treatment for cocaine addiction.

Research on animals can yield tremendous benefits. While primates make up only a half percent of all laboratory animals used, they have been crucial in many medical advances such as developing the polio vaccine, understanding the AIDS virus and searching for a vaccine for the Zika virus.

Humans share 90 percent of their genes with monkeys. Monkeys are a good model for understanding why humans “go along this path of misallocating their behavior to abused drugs,” Banks said.

Such research can help clinicians treat people with addictions and “get them to reallocate their behavior back to socially adaptive non-drug reinforcers,” he said.

While multiple pharmacotherapies exist for treating opiate addiction (such as methadone), the U.S. Food and Drug Administration has not approved treatments for cocaine and methamphetamine addiction.

Banks' research on the drug phendimetrazine suggests that it may be a viable treatment for cocaine addiction. It “decreases cocaine vs. food choice under several different experimental conditions,” which means monkeys are more likely to choose food over cocaine after being administered the drug.

The compound acts as a dopamine transporter inhibitor like cocaine. Because it is a “prodrug,” the body metabolizes it into a pharmacologically active compound called phenmetrazine that acts as a dopamine transporter substrate (or releaser). This combination may represent an “innovative treatment strategy for cocaine use disorders,” Banks said.

He has discovered that although cocaine

and methamphetamine share similar properties, the two drugs will require different pharmacotherapies to treat their abuse. To Banks, these discoveries are exciting as they represent exactly what “preclinical researchers hope to do – that is, impact human health in a positive manner.” •